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NEWSLETTER

January 1980



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FIRE BLIGHT

FEUERBRAND

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INTERNATIONAL WORKING GROUP

ON FIRE BLIGHT RESEARCH

INTERNATIONAL WORKING GROUP ON FIRE BLIGHT RESEARCH

NEWSLETTER

Plant Protection Commission

International Society for Horticultural Science

in cooperation with

U.S. Apple and Pear Disease Workers

and

European & Mediterranean Plant Protection Organization

JANUARY 1980

UNITED STATES DEPARTMENT OF AGRICULTURE
Science & Education Administration

Appalachian Fruit Research Station
Kearneysville, West Virginia, USA

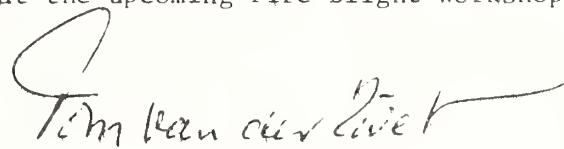
Letter from the Editor

This second fire blight newsletter was prepared and mailed from our new USDA Appalachian Fruit Research Station in Kearneysville, West Virginia, located in the center of the fruit industry of the Shenandoah Valley. With the addition of Dr. Richard Bell, geneticist, and a technician in the pathology laboratory, the pear breeding and fire blight research programs will be expanded in future years.

Following the return of this years questionnaires, the total number of persons interested in fire blight has increased to 195. I was sad to hear that Dr. Hockenhull had dropped from the list because of new commitments at his university. But at the same time I am happy to report that Dr. Paulin at Angers has taken over the job as Secretary for the European Section of the Working Group. At this moment, we have representatives of 32 countries in our working group, even though 23 of these countries do not have fire blight. I believe this is truely indicative of the potential threat of this bacterial disease world wide and the interest many countries have to keep it away from their borders. If any country, at anytime, wants to appoint new or additional contact persons, a blank page is provided in the back of this newsletter to do so.

In order to make the complete card and reprint collection of all the world wide fire blight literature as available as possible to all concerned, I prepared for this newsletter a listing of all the headings and numbering system, including the last citation in the handbook and the last entry in the additional bibliography (updated through December 1978). This will facilitate the annual updating of new literature in the newsletters, using the same numbering system. Naturally, I cannot guarantee that there was no more new literature than those listed in this newsletter. Therefore, I want to emphasize again and urge all to keep abreast of new publications and to send them to me from time to time. This is the only way to keep the literature collection complete and to be able to share the knowledge on fire blight with each other.

I am looking forward to seeing as many of you as possible in September at the upcoming Fire Blight Workshop in Kiel, West Germany.



Tom van der Zwet, Secretary
North American Section
International Working Group on Fire Blight Research

PRESENT STATUS AND NEW OCCURRENCES OF FIRE BLIGHT

COLORADO

Very little blight in Western Colorado in 1979. Low winter temperatures during 1978 - 1979 seemed to have reduced overwintering inoculum. Cankers from 1978 were not active in spring 1979.

N. S. Luepschen
Grand Junction

DELAWARE

Disease presence appeared somewhat less in New Castle County in 1979 as opposed to 1977 and 1978. This despite nearly 20% greater than average rainfall and a cool spring.

S. H. Davidson
Wilmington

GEORGIA

Winter was a little colder than average and spring was late. Pears bloomed in early March and apples in late March. Spring and early summer rains were normal to slight excess. Summer temperature means about normal (80° F). Highest temperatures were 90° on July 5 and 98° on August 21. Summer rainfall was about normal. October was the only "dry" month. We had almost no fire blight in 1979 in pears. We had scattered fire blight in Irradiated 'Mollies Delicious' apple. This probably reflected the high fertilization levels in the irradiated block where we attempted to force rapid growth of potential mutant species.

J. M. Thompson
Byron

ILLINOIS

Fire blight was slight. It was present, but not of economic significance in Illinois.

S. M. Ries
Urbana

PENNSYLVANIA

Fire blight incidence was above normal in southcentral Pennsylvania but did not cause extensive damage. Incidence on young trees was observed in two new plantings. Several trees were killed.

K. D. Hickey
Biglerville

ONTARIO

Fire blight outbreaks occurred in mid to late June, although monitoring indicated that the pathogen was present in orchards in late May. Infections were light to moderate depending on orchard location and local weather conditons. Streptomycin sprays in a pear orchard provided good control of fire blight as the orchard was exposed to inoculum from adjacent infected apple trees. Compared to 1978, 1979 has not been too serious.

W. G. Bonn
Harrow

FRANCE

In summer 1979, a general survey for fire blight has been done in each pear growing area in France by Plant Protection Service:

1. No contaminated area has been discovered outside the South-West or Northern area of France.
2. South West (see map)
 - a. no extension in the Dax area.
 - b. slight extension in the Damazan area (Garonne Valley): four new orchards within 10 km from last year's outbreaks in pear orchards (Passe Grassane, Conference, Doyenne du Comice, Beurre Hardy), and apple orchards (Reine des Reinettes, Reinettes grises du Canada, Calville, Golden Delicious...)

This is the first record of fire blight on apple in France. One record on hawthorn, no record in nurseries (fruits or ornamentals).

- c. new outbreaks: one pear orchard in Le Freche (see map) which is about halfway from DAX to DAMAZAN.
Two pear orchards near Loupiac (see map) (\approx 40 km South East Bordeaux).
3. North

Fire blight has been very active in hawthorn hedges, due to unusual high temperature during blossom period: the disease spread South and East. For the first time in this area fire blight has been found in orchards: pear (Doyenne du Comice, Conference) and apple (James Grieve, Idared).

* * FIRE BLIGHT
FOCUS

1978

NEW AREAS 1979

DUNKERQUE

CALAIS

LILLE

PARIS

ANGERS

BORDEAUX

Loupia

DAMAZAN

DAX LE FRECHE

4. Control

The total eradication of diseased orchards is not expected to be possible; destruction of diseased trees (and those at immediate neighbors) by trimming and/or fire (flame thrower) is performed as soon as detected.

J. P. Paulin
Angers

WEST GERMANY

In the Federal Republic of Germany, outbreaks of fire blight in 1978 were restricted to the known fire blight localities. In the northern federal countries Schleswig-Holstein and Niedersachsen, mainly near the Northsea coast hawthorn hedges were heavily infected. Moreover, very early in summer first blossom infections with strong exudation in apple could be detected, especially on the varieties 'Gloster' and 'Holsteiner Cox'; 'Golden Delicious' showed less symptoms. In every case, in the neighborhood infected hawthorn was observed. Weather was unusually warm at the end of May and additional thunder and lightning occurred. Compared with the last years, infections on *Cotoneaster* has been rare, only the high growing types of *C. salicifolius* and *C. watereri* showed low blossom infections.

After the first registered foci in Nordrhein-Westfalen in the last year, a further distribution mainly in the big cities at the Rhine River has been found. Because of favorable weather conditions, ooze production on hawthorn and *Cotoneaster salicifolius* and *C. watereri* could be detected. Generally the fire blight situation was more dangerous than in the previous year.

W. Zeller
Heikendorf

ENGLAND

There was a slight increase in incidence of disease in pear and hawthorn in south-east England. Weather was warm with adequate rain during part of the pear blossom period and primary pear blossom infection was seen in several orchards. There was further progression of disease in one pear orchard in the south-west where infection was severe in 1978.

E. Billing
East Malling

BELGIUM

Fire blight was appearing for the first time in the fruit growing area of St. Truiden. Due to the late flowering period, we observed infection during primary blossom period of pears. The development of inoculum was promoted by the warm period before and during blossoming.

W. Porreye
St. Truiden

ITALY

Notwithstanding the heavy importation of nursery products from contaminated European countries, the disease has not yet appeared in Italy.

C. Bazzi
Bologna

SPAIN

At present we have not found the first blight pathogen in Spain. We are taking measures to prevent the entry of Erwinia amylovora.

We are studying the most favorable areas for the possible establishment and spread of disease, and we constantly have information about the actual situation of fire blight in France and in other countries. We can do diagnostic tests in three laboratories and we also survey some areas to be sure that we do not have the disease.

C. Noval Alonso
Madrid

SWITZERLAND

No fire blight in Switzerland until today.

R. Grimm
Wadenswil

ROMANIA

Fire blight is not present in Romania.

V. Severin
Bucharest

GREECE

The disease has not been recorded in Greece.

Psallidas
Athens

IRELAND

Fire blight has not been recorded in Ireland.

P. F. Walsh
Dublin

SWEDEN

No fire blight has appeared in Sweden.

The plant protection service of the National Board of Agriculture makes an investigation in the southern part of Sweden every year for the disease. The investigated area is the south coast of Sweden and there is included wild Crataegus, pear trees and orchards, Cotoneaster, Pyracantha and other susceptible ornamentals. This survey starts after mid-June and goes on till September. Suspected samples are tested in the laboratory at the National Board of Agriculture.

The plant protection service recommends that nurserymen reduce their assortment of very susceptible cotoneasters.

K. Olsson
Uppsala

NORWAY

Potential host plants are more or less regularly inspected, but so far the disease has not been detected in Norway.

H. Roed
AS-NLH

ARGENTINA

We have not detected fire blight in our area or country yet. We have had a severe outbreak of blossom blight on pears caused by Pseudomonas syringae. The weather during blossom blight was rainy. Essays with Copper oxychloride and Streptomycine were not efficient.

F. C. Meyer
Rio Negro

DETAILS ON CURRENT FIRE BLIGHT RESEARCH REPORTED FROM SOME UNIVERSITIES AND EXPERIMENT STATIONS

DELAWARE

Ongoing testing program for chemical control.

S. H. Davidson
DuPont Experimental Station

GEORGIA

We are only breeding apples. Fire blight susceptibility is one of our most important selective criteria. Over the long-haul, resistance is necessary in this area.

J. M. Thompson
USDA Fruit Research Station

ILLINOIS

Studies on motility and chemotaxis of Erwinia amylovora have shown that environmental and cultural factors influence the motility by affecting either flagella synthesis or motility itself.

S. M. Ries
University of Illinois

MISSOURI

1. Study of the biochemistry and mode of action of the polysaccharide from E. amylovora isolates.
 - a. There are variations in amount which is correlated w/virulence.
 - b. There are differences in composition; which are also probably related to virulence.
 - c. Ultrastructural study of localization of E. amylovora polysaccharide and the xylem wall modifications it causes.
2. Study of bacterial migration in host tissue and localization of initial sites of colonization and pathogenesis:
 - a. population dynamics
 - b. ultrastructure

R. N. Goodman
University of Missouri

ONTARIO

1. Breeding and selecting of pears for fire blight resistance. Harrow selections continue to perform well in test plantings.

2. Rootstock/scion interactions in apple indicate that the rootstock has no effect on scion susceptibility to fire blight, at least in the case of M26, MM106 and MM111.

W. G. Bonn
CDA Research Station

WEST GERMANY

The current research at our station mainly is concerned with the following topics:

1. Testing for resistance of apple and pear varieties. After testing of 25 varieties we have planted out about 30 new cultivars this year
2. Breeding for resistance in the genus *Cotoneaster* (in cooperation with F. Persiel, (Bundesforschungsanst.fur Gartenbauliche Pflanzenzuchtung). In this aspect we have worked mainly with the low growing cultivars (*Cotoneaster dammeri*, *C. cogestus*, *C. franchetii*) and achieved some good resistance against the pathogen.
3. Control of the disease with new chemicals. A new bactericide brought a similar good effect as streptomycin by spraying artificially inoculated blossoms of the highly susceptible ornamental *Cotoneaster salicifolius floccosus*.
4. Epidemiology on ornamentals. It was followed by the population dynamics of *E. amylovora* on leaves and flowers of susceptible and resistant ornamentals in the growing season and correlated to weather conditions, phenology and course of infection. First results showed that the time of blossom in *Crataegus* is the main important factor for dissemination. The first epiphytic occurrence of *E. amylovora* on leaves were obtained 4 weeks before symptom expression (W. Brulez, Heikendorf)

At the University of Kiel, Dr. Schulz is working on the antagonistic effect of the epiphytic flora against *E. amylovora*.

Dr. Knosel in Hamburg is continuing his studies on phytological effects of antibiotics after blight infection.

W. Zeller
Biologische Bundesanstalt

FRANCE

1. Epidemiology: detection on inoculum sources (cankers, soil, buds) by immunofluorescence and plating; test of a selective medium.
2. Biological control: use of bacteria to protect plant from infection.
3. Chemical control: in vitro tests of fungicides, copper compounds, and antibiotics against *E. amylovora*.
in vivo tests in the growth chamber.

4. Test of available commercial pear varieties.

5. Breeding for resistance in pear.

J. P. Paulin & B. Thibault
INRA

BELGIUM

In collaboration with Dr. Veldeman we are examining the presence of epiphytic Erwinia amylovora on several host plants. These plants were installed at a regular distance (4 km) in the area in order to get an easier check of the presence of the bacteria. We were finding everytime the inoculum as an indication of infection in the area.

We were making trials with bactericides (not yet patented) and unknown active ingredients.

The results were promising in comparison with copper products. Copper was giving too much damage as well on the fruits as the leaves.

W. Porreye
Research Station of Gorsem

ENGLAND

The weather system developed for fire blight production warned the risk of primary blossom infection in pears in south-east England. The system appears to have application in Europe. In July a course of instruction was given to nine European workers. Studies on the biological properties of Erwinia amylovora in relation to virulence continue. Potential control measures are under investigation.

Serological studies showed that the polysaccharide produced by virulent strains of E. amylovora is serologically related to that produced by strains of E. herbicola. (B. Slade, University of Reading) This work is now completed.

Eve Billing
East Malling Research Station

SWITZERLAND

Research on fire blight is restricted to the preparations of preventing the disease to invade the country. In laboratory tests we are trying to find a fast and sure method to detect real fire blight in suspected plants; thus we should be able to take the necessary efficient and urgent measures in case of real danger.

Bacteria are isolated on different media (Nutrient Saccharose Agar, King's Medium B, Miller's Medium) in order to distinguish them from the ordinary saprophytes. The serological way will be the final method to find out whether there is fire blight or not.

In Switzerland, real investigations on fire blight are not possible because the phytosanitary conditions do not allow to work with the pathogen in our country. However, we constantly gather information about the actual situation of research done in other countries, while studying the literature or through personal contacts with our foreign colleagues whose experiences are very useful to us.

Trials with fresh leaf material extending over several years should show the formation of the epiphytic populations of the microorganisms on the leaf surfaces under the specific conditions in Switzerland.

In our laboratory in Wädenswil research is also done on bacterial blossom blight of pears (Pseudomonas syringae), the bacterial canker of sweet cherries and plums (Pseudomonas morsprunorum), the bacterial disease of pelargonium (Xanthomonas pelargonii) and other bacterioses.

R. Grimm
Federal Research Station for
Arboriculture

ITALY

The current research at our Insititue is concerned with these topics:

- a. Analysis of "fire blight" - like cases on rosaceous plants.
During the summer 1979 a serious epidemic of bacterial canker caused by Xanthomonas pruni on plum trees cv. "Calita" occurred in Emilia region.
- b. Analysis of weather (spring pear blossom period) with Billing's system in order to assess the risks to pears in different areas of the Po-valley.

C. Bazzi
Ist. Patologia Vegetale

ARGENTINA

We are working on the control of Pseudomonas syringae using Streptomycin and Copper, but we don't have good results.

F. C. Meyer
Facultad de Agronomia

Future Meetings

September 16 - 18: Second International Workshop on Fire Blight Research, organized by the International Society for Horticultural Science in cooperation with the U. S. Apple and Pear Disease Workers.

Workshop location:

Olympic Hotel in Schilksee on the Baltic coast,
20 Km from Kiel.

Rooms: Single 40 DM/person
Double 35 DM/person

Registration: Deadline April 30, fee 70 DM/person
(includes excursion to Husum)

Purpose of the meeting is to present and share new ideas in research on bacteriology, etiology, epidemiology, breeding for resistance and chemical control of the disease. The program will include presentation of papers, ample time for discussion and a one-day excursion to the test plots near Husum on the western sea coast. For further details, contact Dr. W. Zeller, Biologische Bundesanstalt, Schlosskoppelweg 8, 2305 Heikendorf-Kitzeberg, West Germany, (Tel. 0431-23495).

Comings and Goings

Dr. Bob Goodman (University of Missouri) is spending a 9-month sabbatical overseas: from September 1 - March 1 in the Biophysics Department of the Weizmann Institute of Science, Rehovot, Israel and from March 1 - June 1 in the Department of Microbiology, University of Birmingham, Birmingham, England.

Dr. Harvey Quamme (CDA, Harrow, Ontario) is spending a sabbatical year With Drs. Alston and Watkins at the East Malling Research Station, England.

Dr. Tom van der Zwet will make the second part (first trip in summer 1978) of this germplasm collecting tour through eastern Europe between July 10 and September 10, 1980. On this trip emphasis will be placed on Yugoslavia and Romania which appear to be the richest countries in Pyrus germplasm.

Miscellaneous News

In 1979 an EEC program on fire blight was begun on three main topics:

1. Climate and fire blight (a course was organized by E. Billing in East Malling in July)
2. Chemical control of fire blight
3. Study of varietal susceptibility of pear and apple, and ornamentals. An experimental plot (Dax area) is available, with a small laboratory near by, and a technician, paid on EEC money (for 4 years).

To those who do not have a copy of the additional Bibliography to Agriculture Handbook 510 on fire blight, there are still copies available for distribution. Please contact T. van der Zwet, Appalachian Fruit Research Station, Route 2, Box 45, Kearneysville, West Virginia 25430.

New Doctoral Dissertations on fire blight

Bennett, R. A.

"Characteristics of the fire blight pathogen in relation to virulence"

Ph.D. Dissertation, East Malling Research Station, England, 1978.

Raymundo, A. K.

"Motility and chemotaxis of Erwinia amylovora"

Ph.D. Dissertation, University of Illinois, Urbana, 1980.

Slade, M. B.

"Serological studies on the genus Erwinia"

Ph.D. Dissertation, University of Reading, England, 1978.

Locations reporting cultures of
Erwinia amylovora available for
exchange purposes.

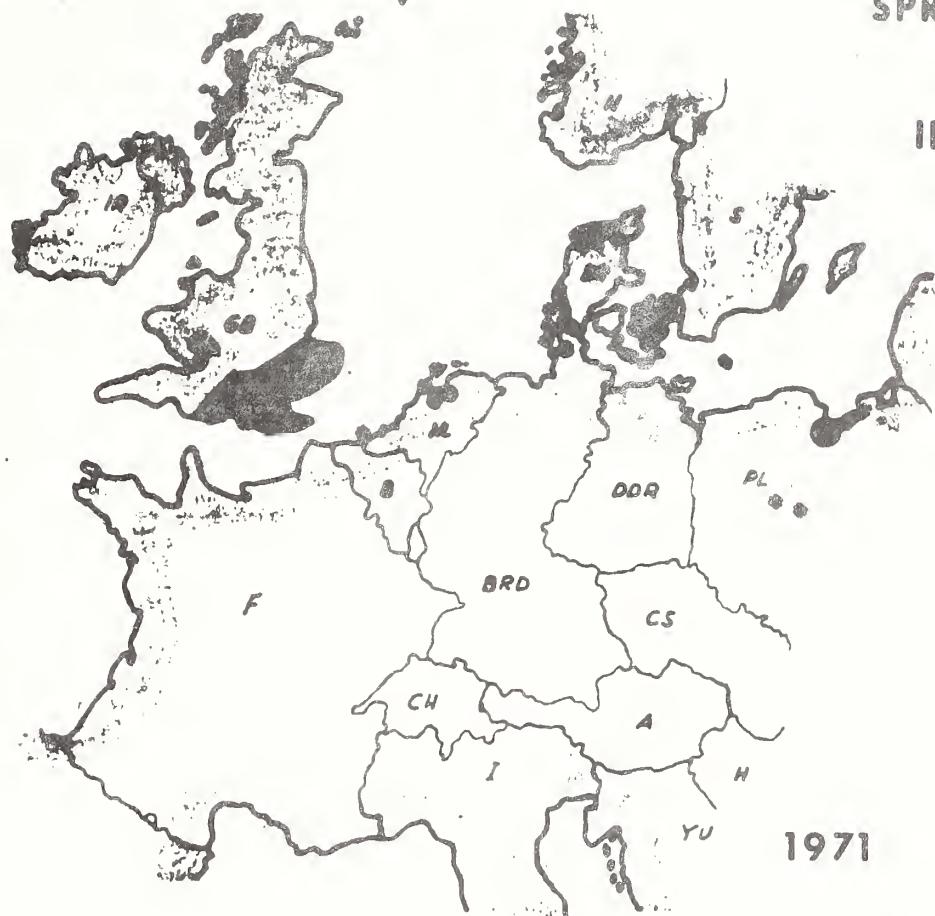
1. Angers - Paulin, J. P.	4. Harrow, Ont. - Bonn, W. G.
2. Columbia, Mo. - Goodman, R. N.	5. Urbana, Ill. - Ries, S. M.
3. East Malling - Billing, E.	6. Wilmington, Del. - Davidson, S. H.

SPREAD OF FIRE BLIGHT

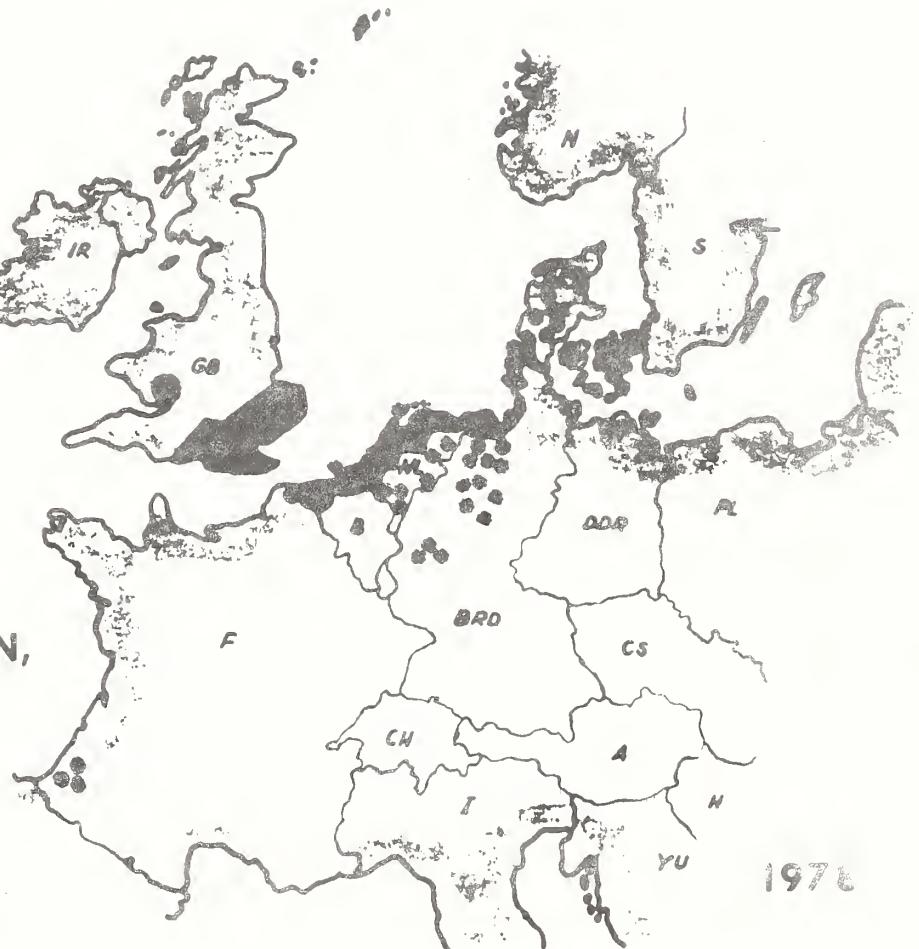
IN WESTERN EUROPE

DURING

THE 1970 DECADE



AFTER GRIMM, R.,



FRUIT RESEARCH STATION,

WADENSWIL

SWITZERLAND

1976

NUMBERING AND HEADINGS OF CARD AND REPRINT COLLECTION
OF FIRE BLIGHT LITERATURE AT THE
APPALACHIAN FRUIT RESEARCH STATION
KEARNEYSVILLE, WEST VIRGINIA

I - XI United States

<u>Numbering</u>	<u>Heading</u>	<u>AH</u>	<u>AB</u>
I-A	Bulletins and Circulars	47 (236)	48
I-B	Distribution and Losses	71 (552)	70
I-C	Host Specificity	34 (789a)	36
II-A	Early History (1170 - 1870)	30 (457)	
II-B	Early History (1871 - 1900)	55 (377)	
II-C	Early History (1901 - 1910)	32 (61)	
III	Bacteriology	147 (871c)	163
IV	Etiology	83 (948a)	89
V	Entomology	36 (867)	38
VI	Epidemiology	49 (81c)	51
VII	Biochemistry	42 (349)	
VIII	Host Nutrition	22 (14a)	
IX	Chemical Control	222 (80c)	227
X	Eradication - Pruning	45 (547)	44
XI	Nature of Resistance	249 (474a)	258
EL	Extension Leaflets	68 (274)	71

AH = Agriculture Handbook Number 510 on Fire Blight

AB = Additional Bibliography to handbook.

Numbers indicate last entry in card and reprint collection as of December 1978 used in the fire blight handbook or additional bibliography. Numbers in parenthesis are literature citation in the handbook.

XII and XIII Foreign Countries

<u>Numbering</u>	<u>Headings</u>	<u>AH</u>	<u>AB</u>
XII-A	Canada	81 (198c)	86
B	New Zealand	35 (53)	27
C	Australia	3 (1)	
D	Japan	15 (295)	7
E	China	4 (913)	6
F	Netherlands	30 (635a)	45
G	England	72 (85a)	83
H	Denmark	32 (216a)	38
J	Sweden	4 (289)	7
K	Norway	1 (288)	
L	West Germany	55 (1046b)	71
M	East Germany	6 (82a)	8
N	Austria	1 (983)	
O	Switzerland	11 (99a)	17
P	Poland	5 (124)	
Q	France	26 (788)	35
R	Belgium	8 (976b)	9
S	Luxemburg		
T	Italy	13 (143a)	15
U	Spain		
V	Czechoslovakia	1 (545a)	
W	Yugoslavia		
X	Hungary	1 (533)	
Y	Romania	5 (567)	3
Z	Bulgaria		

XIII - A	Russia	22 (711a)	23
B	Turkey	1 (284)	2
C	Israel		
D	Jordan	1 (980)	
E	Egypt	4 (263)	5
F	Rhodesia	1 (430)	
G	South Africa	9 (280a)	10
H	India	2 (763)	1
J	Pakistan		
K	Vietnam	2 (962)	
L	Mexico	2 (797)	3
M	Guatemala	1 (842)	
N	Chili		
O	Argentina		2
P	Brasil		
Q	Portugal	3 (869)	
R	Bermuda	1 (1005)	
S			
T			
U			
V			
W			
X			
Y			
Z	Miscellaneous	4 (1064)	5

FIRE BLIGHT LITERATURE RECEIVED DURING 1979

(NOT LISTED IN USDA AGRICULTURE HANDBOOK 510 OR THE ADDITIONAL BIBLIOGRAPHY)

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 Genetic nature of streptomycin resistance in
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 Stigmatic surfaces of pear flower pistils
 as a source of inoculum for Erwinia amylovora.
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 Vol. II: 816 (Abstr.)

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XI-259 Watkins, J. E. and D. H. Steinegger 1978
Avoid failure: choose flowering crabs carefully. Farm, Ranch and Home Quart. 25(1): 7-9.

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Differences in response of apple (Malus Pumila) Cultivars to inoculation with Erwinia amylovora. Proc. 4th Intern. Conf. Plant Path. Bact. Vol. II: 505-512.

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XII-A-88 Bonn, W. G. 1978
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XII-A-89 Bonn, W. G. 1979
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Biologically active substances produced by phytopathogenic bacteria. Jour. Pestic. Sci. (Nihon Noyakugaku Kaishi) 2: 495-504.

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	XII-F-49	Kortleve, C. 1979 Bacterievuur en meidoornhagen. De Fruitteelt, p. 964.
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	XII-F-51	Maas Geesteranus, H.P. 1978 Studies on the susceptibility of <u>Crataegus</u> species to <u>Erwinia amylovora</u> (Burr.) Winsl. et al. Proc. 4th Intern. Conf. Plant Path. Bact. Vol. II: 499-504.
ENGLAND	XII-G-84	Bennett, R. A. 1978 Characteristics of <u>Erwinia amylovora</u> in relation to virulence. Proc. 4th Intern. Conf. Plant Path. Bact. Vol. II: 479-481.
	XII-G-85	Bennett, R. A. 1978 Quatitative studies on the virulence of <u>Erwinia amylovora</u> . Proc. 4th Intern. Conf. Plant Path. Bact. Vol. II: 527 (Abstr.)
	XII-G-86	Billing, E. 1978 The epidemiology of fire blight on hawthorn in England. Proc. 4th Intern. Conf. Plant Path. Bact. Vol. II: 487-492.
	XII-G-87	Billing, E. 1978 The assessment of the potential of fire blight activity from daily temperature and rainfall data. Proc. 4th Intern. Conf. Plant Path. Bact. Vol. II: 523-524.
	XII-G-88	Slade, M.B. and A.I. Tiffin 1978 Serological cross-reactions between <u>Erwinia amylovora</u> and <u>Erwinia herbicola</u> . Proc. 4th Intern. Conf. Plant Path. Bact. Vol. I: 289-294.

XII-0-10 Maurer, T. R. and R. Grimm 1980
Untersuchung zur Prognose des Feuerbrandes.
Schweiz. Zeitschr. Obst und Weinbau 116(1):
10-14.

FRANCE XII-Q-36 Paulin, J. P. 1978
Biological control of fire blight:
preliminary experiments. Proc. 4th Intern.
Conf. Plant Path. Bact. Vol. II: 525.

XII-Q-37 Paulin, J. P. and G. Lachaud 1978
Fire blight situation in France: August 78.
Proc. 4th Intern. Conf. Plant Path. Bact.
Vol. II: 519-521.

XII-Q-38 European and Mediterranean Plant Protection
Organization
Fire blight; France. Europ. and Medit.
Plant Protect. Organ. Rept. 425, 1p.

ITALY XII-T-16 Bazzi, C. 1978
Il "Colpo di fuoco" batterico. L'Informatore
Agrario 34 (21), 4 pp., Illus.

HUNGARY XII-X-2 Klement, Z. 1971
Erwinia amylovora europai es Foldkozi-tenger
melleki elterjedese es a karantenrendzabalyok.
Mezogazdasagi es Elelmezesugui Ministerium
Informacios Kozpontja, Budapest, 56 pp., Illus.

SURVEY OF FIRE BLIGHT RESEARCH IN THE UNITED STATES, CANADA AND EUROPE

(updated through December 1979)

Country/State	Investigator	Discipline	Full-time effort percent	Support personnel number	Source of support	Objectives
United States						
<u>Arkansas:</u> Fayetteville	Slack, D. Rom, R. C.	Pathology Horticulture	5		State	Several phases of fire blight control; testing pear selections for blight resistance.
<u>California:</u> Berkeley	Schroth, M. N.	Pathology	15	.1	State, Fed. Ext.	Study ecology, biology and variation of <i>Erwinia amylovora</i> ; chemical and biological control; monitor bacterial population on pear trees.
Davidson	Holler, W. J.	Pathology	20		State, Fed. Ext., Hatch, Indus.	Field evaluation of <i>E. amylovora</i> monitoring and its relation to blight control.
	Ryugo, K.	Physiology	10	.01	State	Evaluating hybrid resistance in pears.
	Beutel, I.	Pomology	5	.3	State	Culture of pears and blight control.
	Starr, M. P.	Bacteriology	25	.5	State	Study ecological genetics of <i>Erwinia</i> , particularly virulence in <i>E. amylovora</i> .
<u>Colorado:</u> Grand Junction	Luepschen, N. S.	Pathology	5		State	Evaluating new chemicals for blight control.
<u>Delaware:</u> Wilmington	Davidson, S. H.	Pathology	10		Indus.	Evaluating new chemicals for blight control.

<u>Georgia:</u> <u>Byron</u>	Thompson, J. N.	Genetics	10	2	Fed. (USDA)	Breeding and evaluating apple selections for blight resistance; Cooperating with pear program at Kearneysville, WV.
<u>Illinois:</u> <u>Urbana</u>	Ries, S.	Bacteriology	10	.1	Hatch	Epidemiology and Chemotaxis.
<u>Indiana:</u> <u>Lafayette</u>	Williams, E. B.	Pathology	2	.1	State, Hatch	Field survey for blight resistance in scab resistant apple seedlings
	Janick, J.	Horticulture	15	.3	State, Hatch	Breeding pears for blight resistance.
<u>Kentucky:</u> <u>Lexington</u>	Kuc, J.	Biochemistry	5	.5	State	Microbial induced protection of apples and pears against <u>E. amylovora</u> .
<u>Michigan:</u> <u>East Lansing</u>	Kloos, E.	Pathology	20	.7	State, Indus.	Role of bacteriophage in relation to blight control; evaluating new ways to increase effectiveness of compounds; determining role of yellow <u>Erwinia</u> ; monitoring <u>E. amylovora</u> populations; surveying for resistant individuals.
	Carson, R. F.	Horticulture	1		State	Breeding and selecting pear varieties resistant to blight.
	Jones, A.	Pathology	5		Fed. Ext.	Developing better timing of fire blight treatments; monitoring <u>E. amylovora</u> populations.
<u>Minnesota:</u> <u>St. Paul</u>	Stushnoff, C.	Horticulture	10	.5	State	Breeding and evaluating apple selections for blight resistance.
<u>Missouri:</u> <u>Columbia</u>	Goodman, R. N.	Bacteriology	80	2.5	State, Natl. Sci. Found., Indus.	Study host specificity, biochemical properties, and mode of action of <u>E. amylovora</u> toxin; developing bioassay with toxin for evaluating blight resistance of pear and apple seedlings; induction of immunity.

<u>New Jersey:</u> <u>New Brunswick</u>	Hough, L. F.	Horticulture	10	.05	State, Hatch	Evaluation of pear seedlings with oriental parentage for fire blight resistance.
Rainway	Landis, W. R.	Pathology	1	.5	Indus.	Field evaluation of chemical for blight control.
<u>New York:</u> <u>Geneva</u>	Aldwinckle, H. S. Szklaruk, M. Gilpatrick, J. Morelli, J. L.	Pathology Pathology Pathology Pathology	20 2 10 100	.5 .1 .1 .1	State, Hatch	Developing inoculation techniques to evaluate resistance of apple cultivars and seedlings in breeding program; evaluating new chemicals for blight control.
Cummins, J. N.	Cummins, J. N.	Horticulture	10	.1	State, Hatch	Breeding and evaluating apple root stocks for blight resistance.
Lamb, R. C.	Lamb, R. C.	Horticulture	1	.02	State, Hatch	Breeding and evaluating pear seedlings for blight resistance.
Way, R. D.	Way, R. D.	Horticulture	3	.03	State, Hatch	Breeding and evaluating apple selections for blight resistance.
Ithaca	Beer, S. V.	Pathology	50	1.0	State, Hatch	Epidemiological, physiological, and biological factors affecting blight infection and resistance.
Middleport	French, J. P.	Pathology	1	.5	Indus.	Evaluating new chemicals for blight control.
New York	Carroll, V.	Biochemistry	15	1.2	Indus.	Evaluating new chemicals for blight control.
Syracuse	Abdel-Rahman, M.	Horticulture Pathology	20	2.0	Indus.	Evaluating chemicals for blight control; teaching field agents latest methods of blight control.
<u>North Carolina:</u> <u>Goldsboro</u>	Bates, J. J.	Pathology	5	.1	Indus.	Field testing of chemicals for blight control.
Raleigh	Ritchie, D. F.	Pathology	1	.01	State	Evaluating pear seedlings in the field for blight resistance.
<u>Ohio:</u> <u>Wooster</u>	Blake, R. C.	Horticulture	100	1.0	Fed. (USDA)	Breeding pears for blight resistance (cooperative program with USDA in Kearneysville, WV)

<u>Oregon:</u> Hood River	Spotts, R. A.	Pathology	15	State	Effect of overhead tree twisting in pear orchard on incidence of fire blight; testing chemicals for blight control.
<u>Medford</u>	Rackham, R.	Pathology	5	State, Hatch	Monitoring <u>E. amylovora</u> in pear orchards.
	Lombard, P. B.	Horticulture	15	State	Examining pear rootstocks and selections for blight resistance.
<u>Pennsylvania:</u> Barterville	Hickey, K. D.	Pathology	5	State	Evaluating new chemicals for blight control; monitoring for tolerance.
<u>Utah:</u> Logan	Thomson, S. V.	Pathology	10	State	Monitoring bacterial populations on pears, apples and ornamentals.
<u>Virginia:</u> Blacksburg	Drake, C. R.	Pathology	8	State, Indus.	Determining whether pear industry can be established in Virginia
	Yoder, K.	Pathology	5	State, Indus.	Evaluating new chemicals for blight control.
<u>Washington:</u> Wenatchee	Covey, R. P., Jr.	Pathology	40	State	Evaluating new chemicals for blight control; study effect of environmental factors and bacterial population on blight development; surveying extent of streptomycin resistance.
<u>West Virginia:</u> Kearneysville	van der Zeeet, T.	Pathology	100	Fed. (USDA)	Breeding pears for blight resistance; genetic studies of blight inheritance; improvement of inoculation techniques; study relation of artificially inoculated seedlings with naturally infected trees; determining degree of resistance in various pear tissues.
	Bell, R. L.	Breeding	100	Fed. (USDA)	
<u>Wisconsin:</u> Madison	Heimann, M. F.	Pathology	2	State	Diagnosis of fire blight.

District of Columbia:	Egolf, D. R.	Horticulture	20	1.0	Fed. (USDA)
Breeding and evaluating crabapple, pyracantha and cotoneaster for blight resistance.					
CANADA					
<u>British Columbia:</u> Summerland	Yorston, Y. M.	Pathology	10	.75	Canad. and Columbia Dept. Agr.
					Monitoring populations of <u>E. amylovora</u> on irrigated and non-irrigated pear and apple trees; study elimination of <u>E. amylovora</u> from fruit being exported.
<u>Ontario:</u> Guelph	Gibbins, L. N.	Bacteriology- Physiology	30	3.0	Natl. Res. Council of Canada
					Physiology of cytoplasmic membrane of <u>E. amylovora</u> with particular reference to the effect of inhibitors.
Harrow	Quanme, H.	Horticulture	100	1.0	Canad. Dept. Agr.
					Breeding and evaluating blight resistant varieties of pear and dwarfing rootstocks; study inheritance of resistance.
Bonn, W. G.		Pathology	70	.7	Canad. Dept. Agr.
					Developing satisfactory control measures by studying epidemiology and environmental factors; monitoring <u>E. amylovora</u> in orchards.
Simcoe	Hunter, C. L.	Pathology	5	.05	Hort. Res. Inst. of Ontario
Vineyard	Cline, R. A.	Plant Nutrition	2	.05	Hort. Res. Inst. of Ontario
					Survey of fire blight in apples on M26 rootstock in Ontario. Effect of rootstock and nutrients on fire blight.

EUROPE

<u>Belgium:</u> Merkelbeke	Veldeman, R. Geenen, J.	pathology	10	0.05	Fed.	Diagnostic methods; epidemiology; host plant flowering time monitoring system. Insect transmission of fire blight.
<u>Denmark:</u> Copenhagen	Van Laere, O.	Entomology				
	Hockenhull, J.	Bact./physiol. Horticult.- Pathology	40 10 40	0.1	Univ.	Overwintering of <u>E. amylovora</u> in <u>Crataegus</u> - sites and numbers; symptomless infections - ingress through leaves into the system; longevity of bacteria; use of fluorescent antibody techniques in the identification and location of <u>E. amylovora</u> in host tissue.
	Simonsen, J.	Pathology	5	0	Fed.	Influence of cutting and pruning of <u>Crataegus</u> shelter belts and hedges on infection and disease severity.
	Christensen, F. G.	Breeding	25	0	Univ.	Selection of resistant plants. Breeding for resistance in indigenous <u>Crataegus</u> .
	Jensen, A. Jørgensen, H. A.	Pathology	30	0.25	Fed.	Diagnosis, resistance testing of host plants (ornamentals) under field conditions.
<u>England:</u> Maidstone	Billing, E.	Bact./physiol.		1.0		
	Alston, F.	Breeding Pathology		5		Epidemiology - forecasting and control. pear breeding.
	Wantage	Bennett, R. A.	Biochem.	5		Early stages of infection

<u>France:</u>						
Angers	Samson, R.	Bact./Physiol.	10	1.0	Fed.	
	Paulin J. P.	Pathology	90	2.5	Fed.	
	Thibault, B.	Breeding	30	.5	Fed.	
<u>Germany (East):</u>						
Aschersleben	Kleinhempel, H.	Bact./Physiol. Horticul. Pathology	10 10 10	1.0	Fed.	Diagnosis, pathology and control measures of fire blight.
	Reitmann-Philipp, R.	Breeding Horticul. Pathology	30 30 50		Fed.	Breeding for resistance in Cotoneaster.
	Persiel, F.					
Dossenheim	Seemuller, E. Schmidle, A.	Biochemistry/ pathology	5	0.33	Fed.	Resistance testing of apple and pear cultivars; biochemical aspects of resistance.
	Cornils, H. Kusel, D.	Bact./Path. Bact./Path.	100 10	1.0	Fed. Fed.	Mode of action of antibiotics in the plant.
Heitkendorf	Zeller, W. Bruez, W.	Pathology	100	1.0	Fed.	Chemical and cultural methods of control. Epidemiology and physiology of fire blight.
Husum	Meyer, J.	Bact./Physiol Biochemistry	20 10	1.0		Resistance testing of apple, pear and ornamentals under field conditions.
Kiel	Schulz, F. A. Schroder, C.	Biochemistry Pathology	100 100		Univ.	Epidemiological studies on ornamentals and fruit under Schleswig-Holstein conditions; pathophysiological studies - infection and pathogenesis.

Netterlande;						
Boskoop						
Wageningen						
Poland:						
Skiermietzce						
Spain;						
Madrid						

Testing for susceptibility of
ornamental shrubs.

Secretary of the Dutch Fire
Fight Working Group.

Method of fire blight control.

Development of resistant indument
cultivars.

Diagnostic entomology.

Prevention of introduction and
establishment of fire blight in
English orchards, and fruit varieties;
diagnosis and field inspection of
apple, pear and hawthorn

Biometrics; entomology

Cultivars

Cult.

Cult.

Cult.

Cultivars

Cultivars

Cultivars

Cultivars

Cultivars

Cultivars

Cultivars

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LIST OF PERSONS INTERESTED IN FIRE BLIGHT 1/

<u>Abdel-Rahman, M.</u> , Fertilizer-Chemical Division, Agway Inc., P.O. 4933, Syracuse, New York 13221. (315-477-6176)	(1)	USA
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<u>Alston, F. H.</u> , Fruit Breeding Section, East Malling Research Station, East Malling, Maidstone, Kent, ME19 6BJ, England	(1)	UK
<u>Andersen, H.</u> , The Government Plant Protection Service, Gersonsvej 13, 2900 Hellerup, Denmark. (01-620787)	(1)	DK
<u>Ark, P. A.</u> , St. Pauls Towers, 100 Bay Place, Apt. 1915, Oakland, California 94610. (415-835-4700 ext. 293)	(4)	USA
<u>Arsenijevic, M.</u> , Faculty of Agriculture, Institute for Plant Protection, Akademska 2, 21000 Novi Sad, Yugoslavia. (021-58-366)	(3)	YUG
<u>Bailey, Catherine H.</u> , Department of Hort. & Forestry, N.J. Agric. Expt. Station, P.O. Box 231, New Brunswick, New Jersey 08903. (201-932-9389)	(2)	USA
<u>Barrat, J. G.</u> , W. Va. University Expt. Farm, Kearneysville West Virginia 25430. (304-267-4712)	(2)	USA
<u>Bates, J. J.</u> , Biological Research Center, Imperial Chemicals Inc., P.O. Box 208, Goldsboro, North Carolina 27530. (919-736-3030)	(2)	USA
<u>Baykal, N.</u> , A.U. Ziraat Fakultesi, Fitopatoloji Kursusu, Ankara, Turkey	(3)	TUR
<u>Bazzi, C.</u> , Istituto Patologia Vegetale, University of Bologna, via Filippo Re 8, 40126 Bologna, Italy. (227401)	(3)	ITA

1/ Names underlined are contact persons for preparation of fire blight newsletter. Numbers in parenthesis are local telephone and those in column at right indicate activity or interest in fire blight:

1. Actively engaged in fire blight research;
2. Indirectly interested in fire blight;
3. Interested in fire blight, but located in region where disease is not present;
4. Retired but still interested in fire blight activities.

<u>Beer</u> , S. V., Department of Plant Pathology, Cornell University, Ithaca, New York 14853. (607-256-3259)	(1)	USA
<u>Bell</u> , R. L., Appalachian Fruit Research Station, Rt. 2, Box 45, Kearneysville, West Virginia 25430. (304-725-3451)	(1)	USA
<u>Bennett</u> , R. A., Agricultural Research Council, Letcombe Laboratory, Wantage, Oxfordshire OX12 9JT, England. (Wantage 3327)	(2)	UK
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<u>Billing</u> , Eve, Plant Pathology Section, East Malling Research Station, East Malling, Maidstone, Kent, ME19 6BJ, England. (0732-843833)	(1)	UK
<u>Blake</u> , R., Department of Horticulture, Ohio Agric. Res. & Devel. Center, Wooster, Ohio 44691. (216-264-1021 ext. 275)	(1)	USA
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Carlson, R. F., Department of Horticulture, Michigan State University, East Lansing, Michigan 48823. (517-355-5200)	(2)	USA
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<u>Luepschen</u> , W. S., Colorado State University, Orchard Mesa Research Center, 3168 8 th Road, Grand Junction, Colorado 81501. (303-247-2816)	(1)	USA
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<u>Mansergas</u> , A. J. F., Ministerio de Agricultura, Departamento de Fruticultura, Apartado 202, Zaragoza, Spain (976-29 72 07).	(3)	SPN
<u>Massfeller</u> , D., Pflanzenschutzamt, Mittelstrasse 99, P. O. Box 42, 5300 Bonn-2, West Germany. (02221-376901)	(1)	BRD
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<u>Matthee</u> , F. N., Plant Path. Division, Fruit and Food Technology Research Institute, Private Bag X. 5013, Stellenbosch 7600, South Africa (2001)	(3)	SA
<u>Mazzucchi</u> , U., Istituto Patologia Vegetale, University of Bologna, via Filippo Re 8, 40126 Bologna, Italy (227401)	(3)	ITA
<u>McIntyre</u> , J., Dept. of Plant Pathology, Conn. Agric. Expt. Station, Box 1106, New Haven, Connecticut 06504. (203-789-7257)	(2)	USA
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<u>Meijneke</u> , C. A. K., Plant Protection Service, Geertjesweg 15, 6700 HC Wageningen, The Netherlands. (08370-19001)	(2)	NL
<u>Meyer</u> , F. C., Ministerio Agric. y Ganad., Instituto Nacional Tecnol. Agropec. Estación Exper. Regional Alto Valle- Casilla de Correo 52, 8332 Gral. Roca, Río Negro, Argentina. (General Avez 2248)	(3)	ARG

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Zwet, T. van der, U. S. Department of Agriculture,
Appalachian Fruit Research Station, Rt. 2, Box 45,
Kearneysville, West Virginia 25430. (304-725-3451)

(1) USA

SUMMARY

Persons Interested in Fire Blight

Country	Interest Category				Total	Number of Contact Persons
	1	2	3	4		
* USA - United States	34	48		4	86	16
* CND - Canada	3	11			14	3
* BRD - West Germany	10		5		15	1
* NL - Netherlands	5	3			8	1
* DK - Denmark	2	4			6	1
* FR - France	2	1	3		6	1
* UK - England	2	4			6	1
* BLG - Belgium	2	2			4	1
* DDR - East Germany			3		3	1
ITA - Italy			6		6	1
SPN - Spain			5		5	1
SWT - Switzerland			4		4	1
CZE - Czechoslovakia			3		3	1
SWD - Sweden			3		3	1
AUS - Australia			2		2	1
GRC - Greece			2		2	1
HUN - Hungary			2		2	1
JAP - Japan			2		2	
NOR - Norway			2		2	1
ROM - Romania			2		2	1
SA - South Africa	1	1			2	1
YUG - Yugoslavia			2		2	1
ARG - Argentina			1		1	1
BRA - Brazil			1		1	
IND - India			1		1	
IRL - Ireland			1		1	1
MEX - Mexico	1				1	
NZ - New Zealand	1				1	1
OST - Austria			1		1	
POL - Poland			1		1	1
POR - Portugal			1		1	
TUR - Turkey			1		1	
TOTAL	60	76	55	4	195	41

* Countries with fire blight.

SUMMARY

Contact Persons for Fire Blight Newsletter

<u>United States</u>		<u>Other Countries</u>	
Arkansas	Slack, D.	Argentina	Meyer, F. C.
California	Moller, W. J.	Belgium	Porreye, W.
Colorado	Luepschen, N. A.	Czechoslovakia	Vondracek, J.
Delaware	Davidson, S. H.	Denmark	Jensen, A.
Georgia	Thompson, J. M.	England	Billing, E.
Illinois	Ries, S. M.	France	Paulin, J. P.
Maryland	Weaver, L. O.	Germany (East)	Kleinhempel, H.
Michigan	Klos, E. J.	Germany (West)	Zeller, W.
Missouri	Goodman, R. N.	Greece	Psallidas, P. G.
New Jersey	Preiser, F.	Hungary	Klement, Z.
New York	Beer, S. V.	Ireland	Walsh, P.
North Carolina	Drake, C. R.	Italy	Bazzi, C.
Oregon	Lombard, P. B.	Netherlands	Mass Geesteranus, H. P.
Pennsylvania	Hickey, K. D.	New Zealand	Dye, D. W.
Washington	Covey, R. P.	Norway	Roed, H.
West Virginia	ván der Zwet, T.	Poland	Sobiczewski, P.
		Romania	Severin, V.
		South Africa	Matthee, F. N.
<u>Canada</u>		Spain	Noval Alonso, C.
British Columbia	McPhee, R.	Sweden	Olsson, K. M.
Nova Scotia	Ross, R. C.	Switzerland	Grimm, R.
Ontario	Bonn, W. G.	Yugoslavia	Arsenijevic, M.

Fire Blight Mailing List Questionnaire

The list of names in this Newsletter is an annual attempt to establish a complete and updated mailing list of all persons interested in fire blight. Please make corrections and additions where necessary and send me any new names not listed. A new list will be prepared for the third newsletter next winter.

My name, address and telephone are correct
(if not, show change below)

My interest in fire blight is correct
(if not, please indicate below)

My name should be dropped from this list

My/other name should be added to this list

NAME _____

ADDRESS _____

ZIP _____

TELEPHONE _____

Interest in fire blight research: 1 2 3 4

Interest in fire blight newsletter: YES NO

I will serve as contact person
for newsletter questionnaire: YES NO

Please circle
one of each

Please return to your contact person or directly to:

T. van der Zwet
Appalachian Fruit Research Station
Route 2, Box 45
Kearneysville, West Virginia 25430

SURVEY OF FIRE BLIGHT RESEARCH IN THE UNITED STATES, CANADA AND EUROPE
(Changes and additions during 1980)

Country/State	Investigator	Discipline	Full-time effort percent	Support personnel number	Source of support	Objectives
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Please return to your contact person or directly to:

T. van der Zwet
Appalachian Fruit Research Station
Route 2, Box 45
Kearneysville, West Virginia 25430

